

QUALIFICATIONS AND FORMS TO BE INCLUDED WITH BID PROPOSAL

STATEMENT OF QUALIFICATIONS --The Bidder must submit the Statement of Qualifications that specifies the following:

1. The Bidder's previous experience in the type of aerial photography and laboratory work required by these specifications.
2. The Bidder's ownership and availability for use on 24-hour notice, as part of the bidder's regular operation:
 - a. A suitable airplane capable of a 20,000-foot operational altitude ASL; identify the manufacturer, model, and basic capabilities.
 - b. GPS Navigation equipment; identify the manufacturer, model, and basic capabilities.
 - c. A 153 mm nominal focal length precision aerial camera with an acceptable calibration report; identify the manufacturer, model, and basic capabilities. The camera shall be the following types or equal:

Wild RC-30	Zeiss RMK 1TOP
Wild RC-20	Zeiss RMK 15/23
Zeiss Jena LMK 1015	Zeiss LMK 15/2323
3. Information regarding the camera to be used for this contract:
 - a. Number of fiducials (8 required).
 - b. Average weighted area resolution (AWAR) (minimum of 80 required).
 - c. Manufacture's original equipment forward motion compensation (FMC) or equivalent (required).
 - d. Capability of 1/1000 of a second shutter speed.
4. The location of the airport home base of the Bidder's operations for flying precision aerial photography for this contract.
5. The Bidder's ownership and availability as part of the bidder's regular operation of a photography processing plant equipped to perform the work required in these specifications. Color processing may be subcontracted. The equipment shall include the following:
 - a. An automatic dodging type contact printer; identify the manufacturer, model, and basic capabilities.
 - b. Equipment for automatic processing of aerial film; identify the manufacturer, model, and basic capabilities.
 - c. A magenta screen capable of producing copies having a contrast range approximately the same as the contrast range in the negatives. The line count shall be 131 lines per 25 mm and shall be of a size sufficient for copying 508 mm by 610 mm photo-indexes.
 - d. Equipment for producing and copying 508 mm by 610 mm photo-index negatives and prints; identify the manufacturer, model, and basic capabilities.
 - e. An ample stock of all necessary materials in appropriate contrasts, weights, surfaces, and sizes.

SUBMISSION OF ORGANIZATION RECORD AND STATEMENT OF QUALIFICATIONS FORM --The Organization Record form must be completed and signed by the Contractor. The names and signatures of persons authorized to sign documents for the Contractor must be on this form. Signatures authorized on the Organization Record, or by a Power of Attorney, on file with the State prior to bid opening or is submitted with the Bid Proposal are the only signatures allowed on the Bid Proposal. Signatures not approved will be cause for rejection of the Bid Proposal as irregular and unauthorized.

The Statement of Qualifications must be completed and signed by the Contractor or authorized agent as stated above. The Statement of Qualifications should include equipment that the Contractor owns or has available for this contract including optional equipment that may be useful to the State.

An inspection of the Contractor's site will be held prior to assignment of a project to a Contractor not previously qualified. The purpose of the site inspection is to determine to the satisfaction of the Contract Manager, that the Contractor is in full compliance with general specifications of this contract.

STATEMENT OF QUALIFICATIONS

Refer to the Notice to Bidders

Describe three (3) years required experience in precision aerial photography. _____

Describe three (3) years required experience in aerial photography laboratory work. _____

Automatic dodging type contact printer required, make and model. _____

Automatic film processor, make and model _____

Airplane(s), make and model.

	AIRPLANE TYPE AND "N" NUMBER	FLY 20,000 ASL?		HOME BASE AIRPORT LOCATION	SATLELLITE AIRPORT(S) LOCATION
		YES	NO		

Global Positioning System navigation (GPS) Equipment. Type _____**153 mm Nominal Focal Length Camera(s)** to be used for this contract

CAMERA TYPE	MAKE & MODEL	FMC?		USGS AWARDS	CAPABLE SHUTTER SPEED 1/1000th sec?		FOCAL LENGTH mm	DATE OF LAST CALIBRATION
		YES	NO		YES	NO		

Attach current camera calibration reports to this Statement of Qualifications.

Do you have equipment for producing 508 mm x 610 mm photo-index negatives and prints? YES NO

Do you have a magenta screen at least 508 mm x 610 mm (131 lines per inch)? YES NO

Do you have the capability of carrying and storing necessary materials to complete all orders? YES NO

BUSINESS NAME _____ TELEPHONE () _____

NAME _____ SIGNATURE _____ DATE _____

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

ORGANIZATION RECORD

DEPARTMENT OF TRANSPORTATION
Office of Photogrammetry
1727 30th Street 1st Floor MS 35
Sacramento, CA 95816

BUSINESS NAME		BUSINESS PHONE #
BUSINESS ADDRESS	CITY	ZIP CODE #
TYPE OF BUSINESS CORPORATION PARTNERSHIP FIRM OTHER _____		BUSINESS FAX #

State names and titles of principal corporate officers or names of all partners or members of the firm.

NAME	TITLE

State name(s) of the person(s) authorized to sign contract documents with the State.

NAME	SIGNATURE

SIGNATURE	DATE
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IMPORTANT – A NEW FORM MUST BE SUBMITTED WHENEVER AN ORGANIZATION CHANGE OCCURS.

Article I - Description

Contractors shall provide all labor, materials and equipment for precision aerial photography within a 350 km of the Contractor's home base airport and related laboratory work as specified on individual orders. The services will be performed for the Department of Transportation, Engineering Service Center, Engineering Technology, Office of Photogrammetry, located at 1727 30th Street, Sacramento, CA 95816.

The following attachments are hereby incorporated herein and made a part of this agreement.

Attachment A
Attachment B
Attachment C

Contractor Bid Proposal
Recycle certification
Aerial Negative and Edit Sample

Article II - Contract Management

A. Caltrans Contract Manager is _____

Article III - Contract Period

This contract shall begin after July 1, 2000, contingent on approval by the State and expire on December 31, 2003, unless extended by amendment

Article IV - Contract Specifications

A BID/CONTRACT DEFINITIONS

1-1.01 **ASC NO.**--Aerial Survey Contract Number.

1-1.02 **ACCEPTANCE**-- After receipt and inspection of all required work and materials, the acceptance of the work by the Contract Manager.

1-1.03 **AUTHORIZED AGENT**-- A representative of the contractor, indicated on the organization record or Power of Attorney on file with the State, to sign documents, receive, and fulfill instructions from the Contract Manager.

1-1.04 **CALTRANS**--The State of California, Department of Transportation.

1-1.05 **CONTRACT AMENDMENT**-- Written agreements executed by the Contractor and by the State, covering alterations, amendments, or extensions to the contract, as hereinafter provided.

1-1.06 **CONTRACT MANAGER**-- An authorized representative of the State who manages and monitors contracts, acting either directly or through delegated State personnel.

1-1.07 **CONTRACTOR**-- The business, partnership, corporation, or combination thereof, private or municipal, who have entered into a contract with the State, as party or parties of the second part, or an authorized agent of the same.

1-1.08 **DAYS**--Contract working days, excluding Saturdays, Sundays and State holidays, unless otherwise designated.

1-1.09 **DEPARTMENT OF TRANSPORTATION**--The Department of Transportation of the State of California, as created by law.

- 1-1.10 **ESC**--The State of California, Department of Transportation, Engineering Service Center, Division of Engineering Technology, Office of Geometronics, Photogrammetry Branch.
- 1-1.11 **LIQUIDATED DAMAGES**-- Amount of money prescribed in the specifications, to be paid to the State or deducted from moneys due, or may become due, the Contractor for each day's delay in completing the whole, or specified portion, of work beyond the time limit allowed by the specifications.
- 1-1.12 **ORDER LETTER**--A letter to the Contractor from the Contract Manager which orders flying and/or compilation for a specific location and may include special instructions.
- 1-1.13 **ORGANIZATION RECORD**-- A pre-qualification form which, when completed by the Bidder, constitutes the official record of that organization. This form will be referred to for contract award purposes as well as for contract administration purposes. The organization record is made a part of this Notice to Bidders by reference and attachment.
- 1-1.14 **PLANS**--The project maps, layouts and drawings, or reproductions thereof, which show the location, coverage, dimensions, and details of the work to be performed. All such documents are to be considered a part of the contract.
- 1-1.15 **RATES--Unit Bid Prices**, submitted to and accepted by the State, for individual contract bid items as described herein. **Optional Price List**, submitted by the Contractor for products on the list to be used for orders on this contract.
- 1-1.16 **RUSH ORDER**--Orders requiring an accelerated delivery for reproduction work as prescribed in the specifications.
- 1-1.17 **SPECIFICATIONS**-- The directions, provisions, and requirements pertaining to the method and manner of performing the work of the individual orders, or to the quantity and quality of materials in the individual order furnished under this contract.
- 1-1.18 **STATE**--The State of California, Department of Transportation.
- 1-1.19 **STATEMENT OF QUALIFICATIONS**--A pre-qualifications form which, when completed, verifies the Contractor or Authorized Agent has the equipment necessary to work on this contract.
- 1-1.20 **WORK**--All the work specified or contemplated in the contract including all alterations, amendments, extensions, or other written orders of the Contract Manager.

B. SCOPE OF WORK

1. **CONTRACT APPROVAL**--Subsequent to contract approval, the Contractor shall begin work immediately after receiving instructions to proceed with an aerial photography order. Expeditious service and prompt delivery shall be a requirement under this contract. If necessary, the Contractor shall keep all essential equipment and personnel on the project to complete the work within the required time limits.
2. **INTENT OF PLANS, SPECIFICATIONS, AND SAMPLE PLANS**--The intent of the plans, specifications, and sample plans is to prescribe the details for performance and completion of the work which the Contractor undertakes in accordance with the terms of the contract. If the plans, specifications, or sample plans describe portions of the work in general terms, but not in complete detail, it is understood that only the best general practice is to prevail and that only materials and workmanship of the first quality are to be used. Unless otherwise specified, the Contractor shall furnish all labor, material, and equipment, and do all the work involved in executing the contract.

An order letter with flight plans, photo index data, sketches, or other information will be furnished to the Contractor to detail instructions for the work to be done.

3. **DESCRIPTION OF WORK**--The work to be done consists of furnishing precision aerial photography and laboratory work in California as specified in individual orders.
4. **CONTRACT PERFORMANCE**-- If a Contractor fails to provide the services required in individual orders in the time specified, the State requires said Contractor to keep in daily verbal/fax contact with the involved District, informing them as to the status of the order. If, in the opinion of the Contract Manager, the interests of the State are jeopardized, the State reserves the right to cancel that order with said contractor and request another Contractor to complete the order.

C. LEGAL RELATIONS AND RESPONSIBILITY

1. **PERMITS AND LICENSES**--The Contractor shall procure all permits and licenses, pay all charges and fees, and give notices necessary and incidental, for the lawful prosecution of the work.
2. **SECURITY REQUIREMENTS AND RESTRICTED AREAS**--The Contractor must meet Department of Defense security requirements before photographing any installation which is classified for purposes of aerial photography when all or a portion of the installation is located within the area to be photographed. Obtaining clearance for photographing restricted areas shall be the responsibility of the Contractor. This shall not prevent the securing of photography in unclassified areas during the period in which security clearance is being obtained. Photographic materials from photography of classified areas shall be stored, handled, and shipped in accordance with security regulations.
3. **RESPONSIBILITY FOR DAMAGE**--The Contractor shall be responsible for any liability imposed by law and for injuries to or death of any person or damage to property and shall indemnify and save harmless any county, city or district, its officers and employees connected with the work, within the limits of which county, city or district the work is being performed hereunder, all in the same manner and to the same extent as provided above for the protection of the State and all officers and employees thereof connected with the work, except that no retention of money due the Contractor under and by virtue of the contract will be made by the State pending disposition of suits or claims for damages brought against the said county, city or district.

Nothing in the contract is intended to create the public, or any member thereof, a third party beneficiary hereunder, nor is any term and condition or other provision of the contract intended to establish a standard of care owed to the public or any member thereof.

D. PROSECUTION AND PROGRESS OF WORK

1. **CONTROL OF THE WORK**-- The Contract Manager shall decide all questions which may arise as to the quality and acceptability of material furnished and work performed and as to the manner of performance and rate of progress of the work; all questions as to interpretation of the plans, specifications, and samples; all questions as to acceptable fulfillment of the contract on the part of the Contractor; and all questions as to compensation. The Contract

Manager shall have final authority to enforce and make decisions on orders the Contractor fails to carry out promptly.

2. MATERIAL, LABOR AND EQUIPMENT--The Contractor shall furnish all material, labor, and equipment necessary to complete the work; and shall complete the work and deliver to the State all work herein described. All work shall be executed in an expeditious and professional manner to the satisfaction and acceptance of the State and in the manner and time prescribed in these specifications.

The Contractor shall obtain advance approval of the Contract Manager in writing/fax on any changes contemplated in the equipment to be used during the course of this contract from that equipment listed on the Statement of Qualifications submitted with the Contractor's bid. The Contractor shall also notify the Contract Manager in writing/fax, within five days, of changes in personnel listed as an authorized agent on said Organization Record.

The Contract Manager shall have access to the Contractor's plant and other operations during normal working hours, and shall be furnished every reasonable facility for ascertaining that the work complies with the specifications and that the Contractor has the required equipment and materials specified in the Statement of Qualifications. All work shall be subject to inspection and approval by the Contract Manager.

3. SPECIFICATIONS, PLANS, SAMPLES, AND AMENDMENTS--Specifications, plans, samples, and amendments, are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be cooperative, and to describe and provide for a complete work.
4. ASSIGNMENT OF WORK--Except as otherwise specified herein, precision aerial photography work will be assigned, on a project by project basis, to the Contractor who meets all of the following requirements:
 - a. The Contractor has the lowest total bid evaluation cost as determined by the results of the bids received at the Contract bid opening.
 - b. The Contractor's home base for the aircraft used for flying precision aerial photography is located 350 kilometers or less from the center of the project as determined by the Contract Manager.
 - c. Work may be assigned to the Contractor who has the next lowest total bid whenever the Contractor with a lower total bid cost has an aircraft not capable, or is not allowed, to fly at the specified elevation above the mean terrain or cannot deliver the work in a timely manner, all as determined by the Contract Manager.
 - d. In cases of rapidly changing weather conditions at the project site, inclement weather at the Contractor's home base airport, and in emergencies, the Contract Manager may assign precision aerial photography work to the Contractor or Contractors, as determined by the Contract Manager, to be in the best interests of the State.
 - e. If no Contractor's home base is located 350 kilometers or less from the center of the project, the Contractor meeting the project requirements whose home base airport is nearest the center of the project, will be assigned the work, as determined by the Contract Manager.
5. PROGRESS OF WORK— A pre-job conference will be scheduled by the Contract Manager. The pre-job conference will consist of a meeting between the Contract Manager and the Contractor prior to the beginning of work. The Contractor shall be prepared to thoroughly discuss a plan of operations and all phases of the work. The pre-job conference will be held at the Contractor's office or plant.
6. INDIVIDUAL ORDERS-- Generally, written individual orders for aerial photography will be placed with the Contractor prior to ground preparation of the project site. Upon completion of ground preparation, the Contractor will receive verbal/fax notice to proceed to take the aerial photography as soon thereafter as weather conditions permit. Saturdays, Sundays, and holidays are to be considered as being the same as any other day in determining suitable flying weather. The Contractor shall notify the State not later than 9:00 a.m. the day after the photography has been taken. Refer to Contract Performance in the Statement Of Work.
7. FLIGHT LOGS--A flight log representing aircraft flight time shall be maintained to the nearest 0.1 of an hour between the time of take off and the time of landing for each individual order. The flight log shall be signed by the

pilot or the aerial photographer. The log shall be submitted to the ESC or the District Photogrammetry Coordinator originating the request along with the invoice.

8. AVIATION WEATHER LOGS--The Contractor shall maintain an aviation weather log to substantiate any delay due to inclement weather. The weather log shall be available for each project location on each order until the photography has been completed.

After being notified to fly by the Contract Manager, an aviation weather log shall be submitted, when necessary, on the first working day of each week to the ESC or the District Office originating the order.

This weather log shall be from the nearest National Weather Service, Military Aviation Weather Reporting Station or the NOAA NWS Regional Weather Internet Site located at:

<http://www.wrh.noaa.gov/wrhq/javaLinks/wrhqNoJava.html>

It may be a computer printout and identified by the stations call letters. It shall include:

- a. Date and time of weather data.
- b. Photography location and identification.
- c. Any supplemental data provided by other sources and direct observation.

Symbols, if used for weather data, shall conform to those used by National Weather Service.

9. REJECTION OF WORK--In the event of the rejection of any or all of the work for an order, the Contractor shall correct such rejections at his own expense so that the resultant work for final delivery will be in accordance with the requirements of the specifications.

The State reserves the right to order the Contractor to make re-flights at his own expense whenever the aerial photography is rejected for failure to meet specifications.

The State will reimburse the Contractor for his re-flight expenses under the following circumstances:

- a. When the original request required the Contractor to take the photography on a specific date and/or time, without regard to weather conditions.
- b. When weather conditions, subsequent to the time of take-off, deteriorate at the project location so as to make the flight unproductive, or the photographs from such a flight unsatisfactory. The Contractor shall submit sufficient evidence to the State to show that such weather conditions could not reasonably be anticipated at the time of take-off.

10. TIME OF COMPLETION--On orders for aerial photography, after the written order letter and flight plans are placed with the Contractor, verbal or faxed instructions will be given to proceed and he will be expected to take the aerial photography as soon as weather conditions permit.

For black & white aerial photography, including black & white infrared, the order of delivery and time of completion for each order after exposure of the aerial photography shall be as follows:

- a. Proof prints shall be delivered within four days.
- b. Edited contact prints shall be delivered within four days after verbal acceptance of the proof prints.
- c. Photo-index prints and negatives shall be delivered within 10 days after verbal acceptance of the edited contact prints.

For color aerial photography, including color infrared, the order of delivery and time of completion for each order after exposure of the aerial photography shall be as follows:

- a. Black & white proof prints shall be delivered within eight days.
- b. Edited contact prints shall be delivered within 15 days after verbal acceptance of the proof prints.
- c. Black & white photo-index prints and negatives shall be delivered within 10 days after verbal acceptance of the edited contact prints.

The attached sample plans for editing aerial negatives and photography indexes are hereby incorporated and made a part of this contract by reference and attachment.

11. CONFIRMATION--Verbal acceptance or rejection will be confirmed in writing by the State. A fax submitted to the Contractor shall constitute written confirmation.
12. AERIAL NEGATIVES--The exposed aerial negatives become the property of the State, including film containers and spools, and shall be delivered to the ESC. All materials shall be delivered upon request or upon completion of each film roll. When a film can is completed, it shall be delivered to the ESC within twenty (20) days.
13. REJECTED WORK--Re-submittal of rejected work shall be made within the same time limits specified for the initial delivery starting on the day of notice of verbal rejection.
14. DELIVERY COSTS--Normal delivery costs of materials shipped to the State shall be borne by the Contractor. The State will pay shipping costs in excess of normal delivery costs for items shipped by overnight delivery service, if requested by the State.
15. DELIVERY OF MATERIAL--All materials except the aerial negatives for each order shall be promptly delivered.

Delivery locations will be specified in each order. Materials will be delivered to the ESC in Sacramento or the District Office originating the order.

Delivery addresses will be furnished at the pre-job conference or in an individual order.

16. DELIVERY MEMORANDUM--With the delivery of materials for each order, the Contractor shall provide a suitable delivery memorandum in triplicate. This memorandum shall include the ASC No., order number, Contract number including Contractor's ID Letter, item numbers, the quantity and type of materials delivered. In addition, each package of each delivery shall be identified with its ASC No. order number and directed to the attention of the ESC Contract Manager, or District Photogrammetry Coordinator originating the request clearly marked on the outside cover.
17. TERMINATION OF CONTRACT--If the Contractor has failed in any respect to prosecute the work with proper diligence to insure completion within the time specified by the contract, the Contract Manager may, upon five days written notice to the Contractor, terminate the Contractor's control over the work and complete the work by State forces or by employment of other Contractors, or both. Upon such termination, the Contract Manager may take possession of and use all or any part of the Contractor's materials and completed or partially completed work.

If the Contractor's control of the work is terminated, said Contractor is not entitled to receive any portion of the amount to be paid under the contract until it is fully completed. After completion, if the unpaid balance exceeds the amount expended by the State in finishing the work, plus all damages sustained by the State, the excess not otherwise required by law to be retained shall be paid to the Contractor. If costs to the State exceeds the unpaid balance, the Contractor is liable to the State for the excess.
18. CHANGES--The State reserves the right to make such changes in the work as deemed necessary in the best interests of the State. Upon written notice by the State, the Contractor shall proceed with the work as changed and an equitable adjustment will be made therefor.

E MEASUREMENT AND PAYMENT

1. UNIT BID PRICE--The unit bid prices shall include full compensation and all costs incurred and incidental to furnishing the work and materials

Unit Bid Prices shall not include California sales tax. Sales tax will be added to the invoices by the Contractor and paid by the State.

2. PAYMENT FOR CONTRACT ITEMS--The prices paid for the various contract items will be the unit bid prices indicated on the Bid Proposal form. The unit bid prices paid shall be to the nearest \$0.10. Unit bid prices not proposed to the nearest \$0.10 will be rounded to the nearest \$0.10 by the State (i.e.- \$0.14 will be rounded down to \$0.10 and \$0.15 will be rounded up to \$0.20). The extended item total and the total contract price will be changed accordingly based on an extension of the corrected unit bid price.
3. SALES TAX--Applicable California state and local sales tax will be added to the invoices by the Contractor and paid by the State.
4. BILLING FOR EACH INDIVIDUAL ORDER--The Contractor shall submit separate invoices in triplicate for each order to the ESC or District Office originating the order, to attention of the ESC Contract Manager or the District Photogrammetry Coordinator.

The invoices shall be complete. They shall include the, ASC No., order number, contract number including Contractor's ID Letter, item numbers, rates for items being billed, and quantities for items being billed, complete monetary extensions, applicable California state and local sales tax, and any other pertinent data.

F. AERIAL PHOTOGRAPHY AND LABORATORY WORK

1. GENERAL--These specifications cover the requirements for furnishing precision aerial photography and related laboratory work. The requirements specify the types of work to be done, the materials to be furnished, and the equipment to be used processing the work.
2. BID ITEMS--The following item numbers correspond to the bid item numbers of the Bid Proposal Form.

ITEM 1000 FURNISHING AIRCRAFT, EQUIPMENT, CAMERA, AND CREW--Aircraft shall be suitable for photographic missions and capable of 20,000 feet operational altitude ASL. It shall also be capable of exposing aerial photography at a minimum flying height of 1000 feet above terrain in areas where Federal Aviation Administration regulations permit.

The aircraft used for precision photography shall be equipped with GPS navigation equipment for the accurate location of flight lines. The State will provide the flight plans on USGS, 7.5 minute quad maps, or portions thereof, or similar maps. The Contractor shall locate the flight lines by scaling the latitude and longitude from the furnished maps. If portions of USGS quad maps are furnished to the Contractor by the State, it shall be the Contractor's responsibility to obtain the full USGS quads for scaling. The Contractor shall utilize the GPS navigation equipment to accurately photograph the required areas during the aerial photography mission.

The aerial camera used to acquire precision aerial photography for photogrammetric mapping shall conform to the following additional specifications:

- a. The camera shall have eight fiducials.
- b. The camera shall have an average weighted area resolution (AWAR) of 80 or higher as determined by the USGS Camera Calibration Report.
- c. The camera shall be equipped with forward motion compensation (FMC). The forward motion capabilities shall be employed during the aerial photography mission. Aerial photography acquired with a FMC equipped aerial camera shall not display any significant distortions caused by the forward motion of the aircraft.

- d. The camera shall have the capability of 1/1000 of a second shutter speed. Photography for this contract shall not be exposed at a shutter speed slower than 1/250 of a second.
- e. Shall have a USGS or Manufacturer's Calibration Report made within the last three years. The camera shall not have been disturbed, repaired, or modified in any fashion since the calibration report was made.

If at any time after award of the contract the camera is disturbed, repaired, or modified in any fashion, the Contractor shall submit a new calibration report to the ESC prior to utilizing the camera for any precision aerial photography performed under this contract.

Precision aerial photography shall not be performed under this contract with a camera calibration report dated more than three years prior to the date of the order letter.

The State reserves the right to restrict the use of any camera based upon data contained in the calibration report, or based upon operational results.

Unit Bid prices shall cover full compensation for furnishing aircraft, equipment, camera, crew and any other incidentals required to complete a photographic mission.

ITEM 1100 MOBILIZATION OF EQUIPMENT AND CREW--The State will pay a fixed amount for the Contractor's cost of mobilizing camera, equipment and personnel for each individual flying order. If more than one individual order can be flown on one mission, the mobilization charge shall be prorated equally among the individual orders.

ITEM 1200 FLIGHT TIME--Payment will be made only for flight time between the time of takeoff and the time of landing. If more than one individual order is flown on one mission, a record shall be kept showing the time required for each order, and the time going to the projects and returning from the projects shall be prorated. Time lost in the air during a photographic mission due to restrictions or closed air space, as ordered by the FAA controllers, will be paid for as flight time if correctly entered and noted on the flight log. Such flight time will not be considered unless it can be shown that it was beneficial to the State, as determined by the Contract Manager. A flight log signed by the pilot or photographer shall be submitted with each invoice.

Flight time shall be billed to the nearest one-tenth of an hour.

ITEM 1400 STANDBY TIME--Payment will be made for standby time, if at any time during a photographic mission, the aircraft is requested or ordered to land or standby by the authority of the Federal Aviation Administration, Civil Aeronautics Board, or the State before proceeding with the mission.

Standby time must be fully documented as to time, place, reasons, and by virtue of what authority. Such substantiation must accompany the flight log and must be verifiable before payment will be authorized. Standby time will not be considered unless it can be shown that it was beneficial to the State, as determined by the Contract Manager. Standby time shall be billed to the nearest one-tenth of an hour.

ITEM 2000 AERIAL EXPOSURES--Flight plans will be furnished, by the State, with the individual orders. Also included are flight lines, scales, and flying heights. These plans will show sufficient detail to complete an aerial photography mission. Occasionally, exposure stations or flight line locations will be pre-marked on the ground.

Contact prints shall be trimmed leaving the data panel visible.

All prints delivered shall be arranged in order of exposure numbers.

Proof prints shall be hand edited in the same direction as post miles as indicated on the flying order letter. Indicate flight line number on the first and last photo of each flight.

The numbers used in the preliminary editing of the proof prints shall represent the numbers to be assigned on the edited prints.

Proof prints shall be furnished on the same paper and be of the same quality as the edited prints.

Any variation in the aerial photography exceeding tolerances may be grounds for rejection of the photography. Re-flight photography shall be taken with the same camera used in the original flight, unless the photography was rejected due to a fault of the camera.

- a. Lateral deviation of the flight lines from those shown on the plans shall not exceed 13 mm on the aerial photographs.
- b. Lateral and longitudinal deviation of the spot exposures from those shown on the plans shall not exceed 13 mm on the aerial photographs.
- c. The flight altitudes shall not deviate from those shown on the plans by more than five percent of the flying height above mean terrain for photography at a nominal scale of 1:4800 or larger.
- d. The flight altitudes shall not deviate from those shown on the plans by more than 3.3% of the flight height above mean terrain for photography at a nominal scale smaller than 1:4800.
- e. Crab, as measured from the line of flight indicated by the principal points of consecutive photographs, shall not exceed ten degrees between any two consecutive photographs, and shall not average more than five degrees on any one flight line nor more than two degrees for the entire area.
- f. Tilt, defined as the departure of the optical axis of the camera from a plumb line, shall not exceed five degrees on a single photograph nor average more than one degree for a single flight line. Relative tilt between two successive exposures shall not exceed six degrees.
- g. Normal forward overlap for stereo coverage shall not exceed 65% nor be less than 55% and shall average 60%. However, the State reserves the right to specify the forward overlap in individual orders.
- h. Side lap, if required, will be specified in individual orders.
- i. Shutter speeds slower than 1/250 of a second shall not be used.

Poor image quality due to excessive shadows, clouds, haze, image motion, poor exposure location or processing shall also be grounds for rejection of the photography.

Every effort shall be made by the Contractor to minimize the shadows caused by trees or topographic relief.

Photography shall not be undertaken when the sun angle is less than thirty degrees above the horizon.

The aerial negative film shall be a fine grain 0.4 mm polyester base. Exposing and processing of aerial negatives shall be done in conformance with the manufacturer's recommendations, and with accepted photographic practice and meet the following specifications:

- a. Negatives shall show no streaks, static marks, chemical stains, or other deficiencies which would interfere with their intended use.

Negatives shall be clear and sharp in detail, of normal density and fine-grained quality.

- b. All negatives may be subject to testing with a transmission densitometer as the State deems necessary. Negatives not meeting the standards set forth may be rejected, and photography shall be redone at the expense of the Contractor.
- c. Density readings will be taken at the locations of minimum and maximum density of the negative lying within 100 mm of the principal point.

(1) GROSS FOG. The combination of base density and net fog as determined by measurement of the unexposed area between negatives. The density of the gross fog shall not exceed 0.20.

(2) MINIMUM AND MAXIMUM DENSITY. Minimum density shall be not less than 0.40 and maximum density shall be no more than 1.50. These readings include gross fog density.

(3) DENSITY SCALE (CONTRAST). The difference in densitometer readings between minimum and maximum densities of the negative shall not be less than 0.50 and no more than 1.10.

- d. Reducing or intensifying of negatives will not be permitted and the State may chemically and/or physically test such negatives as deemed necessary.

Assembly of the aerial negative film rolls and exposure numbers shall be as follows:

- a. Individual orders shall be spliced so that each roll will only contain a single district's photography. The splice shall be at least 150 mm from an acceptable frame. The splice shall be a butt-join and aligned so as to retain the original alignment of the roll of film. The tape used for splicing shall be polyester film tape, and shall be applied to both sides of the film.

ROLL NUMBERING: As each District requests its first order, assign an individual roll number which includes the Contractor's assigned letter, i.e. 12B-25 would translate to roll number 12, the second lowest bidder "B", exposure number 25. Assign a new roll number whenever a District's current roll becomes full. **DO NOT DUPLICATE ROLL NUMBERS.**

EXPOSURE NUMBERS: Begin numbering with exposure number one when starting a new roll. As new orders are added to the roll, the first exposure number shall be the number following the last exposure number used for the previous order for the corresponding District.

Rejected photography shall be left on the roll unedited.

Cutting of individual exposures from the roll, for reproduction purposes, is not permitted.

- b. Color film and black & white film shall be kept on separate rolls.
- c. On each roll of aerial film submitted there shall be a one meter leader and a one meter trailer.
- d. The spool size shall be a nominal 130 mm in diameter (76 m roll of film). A spool container fitting each spool shall be provided by the Contractor.

Editing of the aerial negative exposures shall not obscure the camera fiducial marks, and shall meet the following specifications.

- a. The font characters used to identify the negatives shall be approximately 5 mm high and shall be mechanically stamped with opaque ink or drafted using a mechanical system and black ink made for film, in such a manner as to print clearly in positive form on the image area of the photograph as shown on Aerial Negative Edit Sample.
- b. On the first and last accepted exposure of each flight line, the negative shall be edited across the top with the date, time, nominal photo scale, District-County-Route abbreviation, roll number, Contractor's assigned letter, and exposure number. In the nonstereoscopic area of the negative, there shall begin another line with Caltrans, ASC number, order number, and the calibrated focal length of the camera to one hundredth of a millimeter. See Aerial Negative Edit Sample.
- c. On all accepted exposures between the first and last exposures on each flight line, each negative shall be edited across the top with the date, time, nominal photo scale, District-County-Route abbreviation, roll number, Contractor's assigned letter, and exposure number as shown on Aerial Negative Edit Sample.
- d. All numerals shall be block Leroy lettering, as shown on the Aerial Negative Edit Sample.

All film shall be cleaned thoroughly before shipment, carefully packed and shipped in substantial containers.

Film container labels shall show the break-down for only the usable negatives in each roll, listed in the order that they appear on the film roll and should be neatly lettered.

Film container labels will be furnished by the State.

ITEM 2110 AERIAL EXPOSURES, 230 mm BY 230 mm, BLACK & WHITE AND BLACK & WHITE INFRARED-- The exposures shall be on a fine grain 0.4 mm polyester base aerial negative film. Contact proof prints and contact prints shall be of uniform color and density and such a degree of contrast that all details of the negatives will show clearly both in the shadows and the highlights as well as in the half-tones between shadows and the highlights. Resin coated variable/graded paper shall be used in making prints to accomplish this purpose. All prints shall be clean and free from chemicals, stains, blemishes, uneven spots, air bells, light fog or streaks, static marks and other blemishes which, in the opinion of the Contract Manager, would interfere with their intended purposes. They shall be delivered in a smooth and flat condition. Exposures shall be made with an automatic dodging type printer.

The unit bid price for each exposure shall include all work described under **Item 2000** and the following:

- a. Furnish, expose, develop, and edit all aerial film.
- b. Furnish one set of untrimmed contact proof prints with the camera exposure number is visible.
- c. Furnish two sets of edited contact prints.

Time requirements are specified elsewhere in these specifications.

ITEM 2130 AERIAL EXPOSURES, 230 mm BY 230 mm, COLOR--The exposures shall be taken on Kodak Aerocolor Negative Film No. 2445, or equal. All statements for **Item 2110** shall apply to this item, except as follows:

The unit bid price for each exposure shall include all work described under **Item 2000** and the following:

- a. Furnish, expose, develop, and edit all aerial film.
- b. Furnish one set of untrimmed black & white contact proof prints with the camera exposure number visible.
- c. Furnish two sets of edited color contact prints.

ITEM 2140 AERIAL EXPOSURES, 230 mm BY 230 mm INFRARED COLOR--The exposures shall be taken on Kodak Aerochrome infrared color film No. 2443 or equal. All statements for **Item 2110** shall apply to this item, except as follows:

The unit bid price for each exposure shall include all work described under **Item 2000** and the following:

- a. Furnish, expose, develop and edit all aerial film.
- b. Furnish one set of edited black & white contact negative prints.
- c. Deliver the negatives to the ESC Office in Sacramento.

ITEM 3000 CONTACT PRINTS—When more than the two sets included with individual orders are requested, this item shall be used. Each contact print set shall be arranged in order of exposure numbers for shipment..

ITEM 3110 CONTACT PRINTS, BLACK & WHITE AND BLACK & WHITE INFRARED-- Contact prints from aerial negatives shall be furnished on resin coated paper as specified in each individual order. These contact prints shall conform to the same specifications as stated in **Item 2000**. Exposures are to be made with an automatic dodging type printer, unless otherwise specified.

ITEM 3130 COLOR CONTACT PRINTS--Contact prints from aerial negatives shall be furnished on Kodak Ektacolor resin coated paper, or equal. Exposures shall be made with an automatic dodging-type printer, unless otherwise specified. Include color balance.

ITEM 4000 PHOTO-INDEXES--A photo-index is an assembly of contact prints with corresponding images matched, clearly showing each roll and exposure number as well as labels for communities, principal streets, highways, railroads, streams, lake, political boundaries, (i.e. city limits, county boundaries and State lines), and post miles / kilometer posts.

All labels in the body of the photo-index shall be block style letters measuring 3 mm high on the photo-index. The use of tape labels with opaque backgrounds will be permitted, providing the tape is neatly trimmed to the limits of the lettering on all sides.

When roll and exposure numbers are obscured by overlapping exposures, they shall be neatly labeled in their proper positions on the completed assembly.

Continuous or adjacent flights and overlapping cross flights shall be assembled together on the same index sheet. If multiple index sheets are required they shall be properly referenced at each adjoining end using the same letter at the match area.

A three diameter reduction of the photography is generally required for photo-indexes. No reduction of the photography is required if the number of exposures in an order will fit full size on one photo-index sheet. No other reduction shall be used.

When an order is flown with different scales of photography, and the total number of photographs will fit on one index sheet, they shall be placed on the same sheet using the appropriate scale bar, furnished by the State, under each assembly of photographs. No scale bar shall appear in the title block.

The photography shall be laid down on the photo-index with post miles and/or kilometer posts increasing from bottom to top and/or left to right. The flight lines shall be rotated to maximize the number of photographs per photo-index. The north arrow shall be rotated to correspond with the general direction of north as shown by the photographs.

Photography shown on an index sheet shall generally be oriented to one north arrow. On occasion more than one north arrow may be allowed on a single index sheet to maximize the number of photographs on a single sheet. The contractor must obtain prior approval from the ESC or District.

When an order is flown using color photography, the words COLOR PHOTOGRAPHY shall be placed on the lower right hand corner on the white area of each index sheet. If the layout of the photography is such that the label cannot be placed in the lower right hand corner then the label may be placed elsewhere on the lower part of the index sheet in the white area.

An Index key is required on each order that requires more than one photo-index sheet. The appropriate sheet shall be shaded in the index key. The index key shall be oriented to the photography.

The photo-index shall have a title block identical in size, style, lettering and symbolization to the contents of the attached Aerial Negative and Photo Index Edit Sample. If the contractor uses a computer font to create the title block, it must be the Windows Arial font or equal. The title block shall be oriented across the bottom (508 mm) of the negative. A double exposure technique is acceptable for copying the title block and the photo-index assembly.

The state will furnish scale bars for all scales of photography and the three diameter reduction for the photo-index. No other scale bars are to be used.

The Post Mile and/or Kilometer Post data for the title block shall correspond to each individual photo-index sheet not the entire location designation. The Contractor may be required to interpolate the Post Mile and/or Kilometer Post to be placed at the end of an index sheet if there no Post Mile and/or Kilometer Post data provided. When required to interpolate Post Mile and/or Kilometer Post data, the contractor shall place the disclaimer shown below on the white area of the photo-index sheet.

Disclaimer: POST MILE 0.3 MILE OR LESS FROM THE TRUE POST MILE LOCATION.

It is not necessary for the Contractor to notify the State prior to making the copy negative of the photo-index, however, by signing this contract the Contractor assures the State corrections will be made or a new negative will be re-made if it is rejected by the State.

The photo-index lay down shall be kept until notified by the State that it may be discarded or until the end of the contract period, whichever comes first.

ITEM 4110 PHOTO-INDEX COPY NEGATIVES--Photo-index copy negatives shall be furnished on continuous-tone 0.7 mm polyester base film, standard cut stock 508 mm by 610 mm in size. Negatives shall be free from stains, scratches, finger marks, dirt and blemishes of any kind. No tape shall be placed on the negative.

All costs incurred in the photo-index assembly, editing, and production of the photo-index negative shall be included in the unit price bid under this item. Contact prints required in the assembly shall also be included in this bid item.

If editing is to be added on the negatives, the names, symbols, or other identifying line data of geographic features, such as county boundaries, cities, towns, places, principal streets and roads, state highways, railroads, waterways, lakes, etc., shall be neatly shown with a suitable stable ink on the non-emulsion side of the photo-index negative. Lines denoting boundaries or other identifying data shall not be less than 0.25 mm or more than 0.50 mm in width. Names or symbols shall be accomplished by the use of a mechanical lettering device, and shall be 3 mm.

ITEM 4210 PHOTO-INDEX PRINTS, RESIN COATED PAPER--Continuous-tone photo-index prints shall be produced by contact printing from the photo-index copy negatives on 0.7 mm resin coated paper 508 mm by 610 mm in size.

ITEM 4300 PHOTO-INDEX PRINTS -HALF-TONE FILM POSITIVES--Photo-index prints from photo-index negatives will be furnished on either clear or matte 0.4 mm polyester base film 508 mm by 610 mm in size with the use of acceptable magenta screens in contact with the positive material, resulting in a true half-tone image. The contrast range in the half-tone film positives shall be approximately the same as the contrast range in negatives used for reproduction.

The photo-index prints shall be of the same quality specified for contact prints and copy negatives and shall be delivered in a clean and flat condition.

ITEM 8210 FILM DIAPOSITIVES, BLACK & WHITE--Processing shall be done in conformance with manufacturer's recommendations and shall have density readings, as determined through the use of a transmission densitometer, as follows:

A density scale of 1.20 with no readings less than 0.30 nor more than 1.50.

Chemically reducing or intensifying of the diapositives will not be permitted, and the State may chemically and/or physically test such diapositives as deemed necessary.

Exposures are to be made with an automatic dodging-type printer, unless otherwise specified.

The diapositives shall be made with the image direct, printing emulsion to emulsion, unless otherwise specified.

The diapositives shall be clear and sharp in detail, uniform in range of density and of fine grained quality and such a degree of contrast that all details of the negative will show clearly both in the shadows and the highlights as well as in the half-tones between the shadows and the highlights. They shall be free from streaks, static marks, chemical stains, scratches, finger marks, or other deficiencies which would interfere with their intended purpose. Excessive variance in contrast between exposures shall be cause for their rejection.

Diapositives shall be on Kodak Aerographic Duplicating film 4421, or equal.

ITEM 8310 FILM DIAPOSITIVES, COLOR-- Processing shall be done in conformance with manufacturer's recommendations and shall have density readings, as determined through the use of a transmission densitometer, as follows:

A density scale of 1.20 with no readings less than 0.30 nor more than 1.50.

Chemically reducing or intensifying of the diapositives will not be permitted, and the State may chemically and/or physically test such diapositives as deemed necessary.

Exposures are to be made with an automatic dodging-type printer, unless otherwise specified.

The diapositives shall be made with the image direct, printing emulsion to emulsion, unless otherwise specified.

The diapositives shall be clear and sharp in detail, uniform in range of density and of fine grained quality and such a degree of contrast that all details of the negative will show clearly both in the shadows and the highlights as well as in the half-tones between the shadows and the highlights. They shall be free from streaks, static marks, chemical stains, scratches, finger marks, or other deficiencies which would interfere with their intended purpose. Excessive variance in contrast between exposures shall be cause for their rejection.

Diapositives shall be on Kodak Aerochrome Duplicating film 2447, or equal.

ITEM 9000 EXTRA SERVICE--To be used only on the written approval of the Contract Manager, for special services not included in the bid items. Extra service shall be billed to the nearest 0.1 of an hour.

ITEM 9003 OVERNIGHT SERVICE-- To be used only on the written approval of the Contract Manager. This is not a bid item. It allows the Contractor to recover the amount paid to overnight delivery companies. It may also be used for any extra charges charged by the color processing vendor in order to shorten the turn-around time for color orders. Receipts are required with invoice.

F. INSPECTION AND TESTING OF DELIVERED MATERIALS

1. GENERAL--The State reserves the right to reject any materials that do not meet specifications and that do not meet accepted standards for resolution, tonal contrast, scale, and other obvious defects.
2. ACCEPTANCE OR REJECTION--Materials will be tested and inspected by the State as soon as possible after receipt of all material as specified in each individual order.

Materials rejected by the State shall be resubmitted as soon as possible by the Contractor under the terms of the contract.

3. COST OF TESTING--The cost of initial testing and inspecting of the work under each order prior to acceptance or rejection shall be borne by the State. Before accepting any previously rejected work, the Contract Manager will retest the material. Should the resubmitted work fail to comply with the specifications, the cost of re-tests required to prove that the material meets the specifications may be assessed against the Contractor. Such assessments against the Contractor shall be deducted from any moneys due.